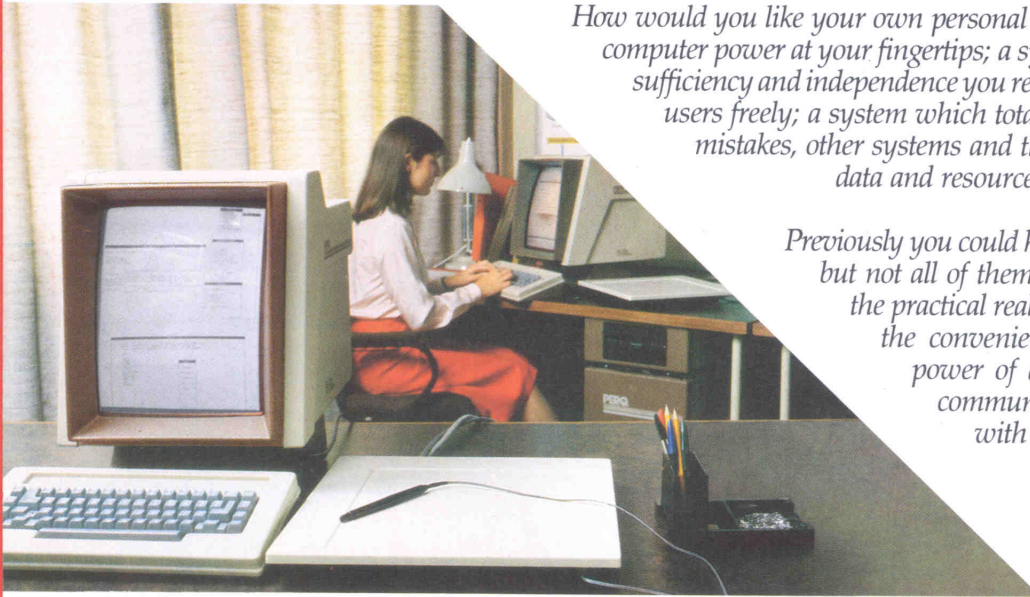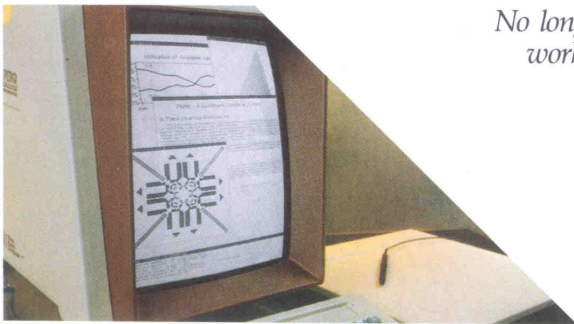# PERQ

ICL helps shape the future

The advent of the personal workstation

How would you like your own personal computer system at your desk; exceptional computer power at your fingertips; a system powerful enough to give you the self-sufficiency and independence you require; the ability to communicate with other users freely; a system which totally protects you from other users and their mistakes, other systems and their failures; the option to share programs, data and resources whenever applicable; instant computing.

Previously you could have had some of these features individually, but not all of them together. However, ICL now brings you the practical reality – a computer resource that combines all the convenience of a desk-top microcomputer, all the power of a dedicated minicomputer system, all the communications advantages of a time-shared system with all the quality and facilities of an interactive graphics terminal.

No longer will you be denied machine time when you need it most; the personal workstation provides you with all you want from a computer system – when you need it, how you need it – to meet your present and future requirements.
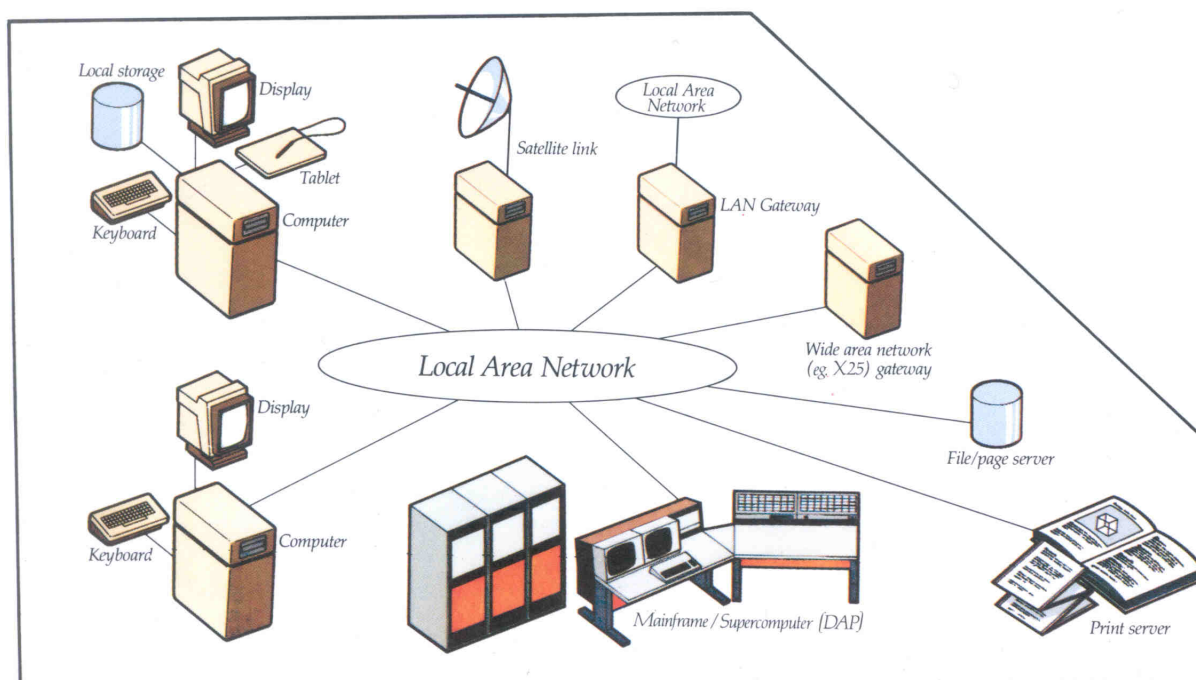
The PERQ professional workstation

PERQ is an extremely powerful, single user workstation which exploits the latest developments in technology to bring unprecedented levels of computing power to you at your desk. The workstation provides ultra high performance raster graphics of superb quality, and each PERQ, whilst entirely self-sufficient, provides connection to a high speed Local Area Network for communication with other workstations and access to shared resources.


PERQ SOFTWARE

Pascal Compiler

Multi-Process Operating System
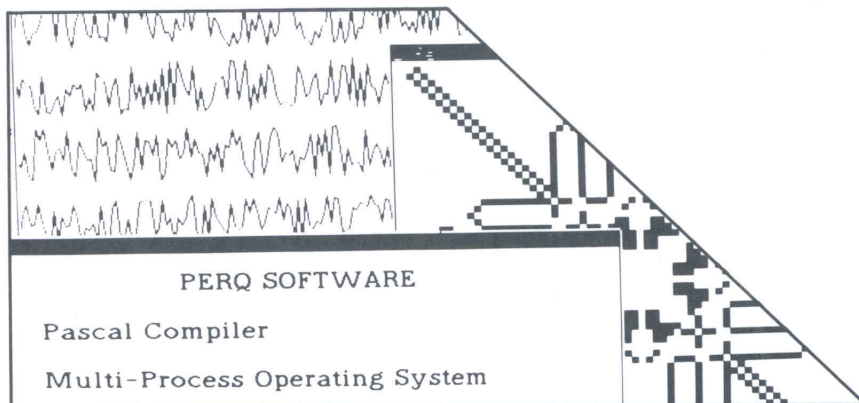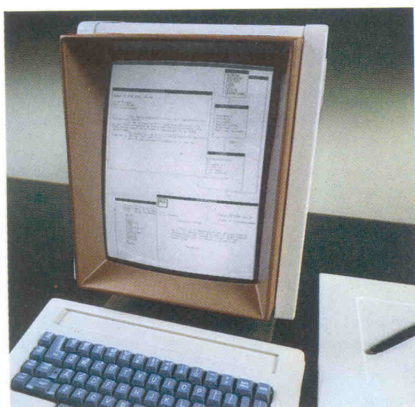
PERQ enables you to solve problems more quickly and more effectively by giving you:

● *Instant access to your machine and your data*

● *Uninterrupted use of your own computing facilities*

● *Faster turnround by virtue of the dedicated power of a single user computer*

● *Unparalleled quality of interaction in the form of both hardware and software tools*

Local storage

Display

Tablet

Keyboard

Computer

Satellite link

Local Area Network

LAN Gateway

Wide area network (eg. X25) gateway

Local Area Network

Display

File/page server

Keyboard

Computer

Mainframe / Supercomputer (DAP)

Print server

Computing power of your own

The base unit of PERQ, which contains the powerful CPU, up to 1 megabyte of store, a floppy disc drive and a 24 megabyte fixed disc, is designed to fit unobtrusively into any office. The unit can easily be housed beneath a desk top and can be plugged immediately into a standard mains outlet. This means that a typical office desk can be transformed into a powerful computing work-station with substantial local storage. Self sufficiency becomes a reality. With an ability to process up to 1 million Q-codes per second PERQ enables you to carry out the computing you require when you like in your own office. If you wish to tailor PERQ to a particular application, a valuable feature of the system — a writable control store — enables you to enhance the existing instruction set or implement an entirely different one to match your specific needs.
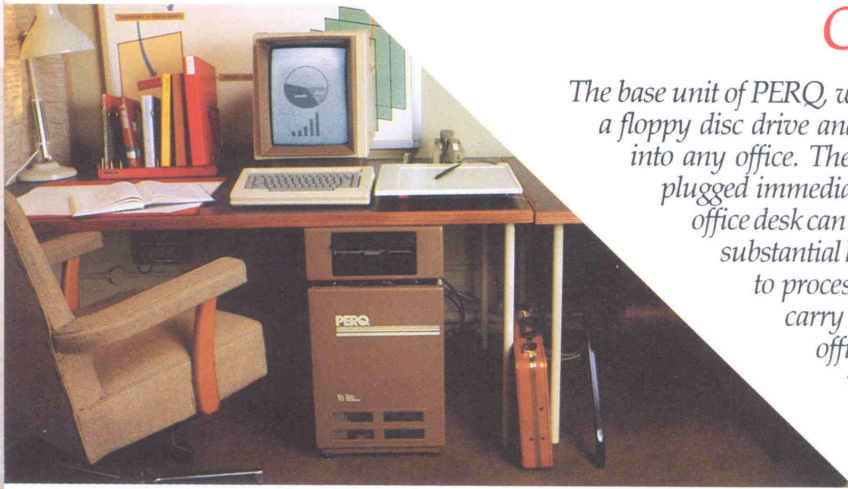
Living graphics

The PERQ's superb graphics features are supported by special and extremely powerful hardware.

The screen itself is A4 in size which is the natural shape to display your documents with life-like representation. In addition, just as in the real world documents contain a mixture of drawings together with characters of different fonts, so too can the PERQ display an accurate reproduction of that information.

The high performance of the graphics is brought about by additional hardware instructions ('RasterOp') which eliminate the delays usually associated with Raster-scan displays. These enable all or part of the display image to be changed by a single instruction. This, together with the flicker-free, high refresh rate display means that real animation is now possible.
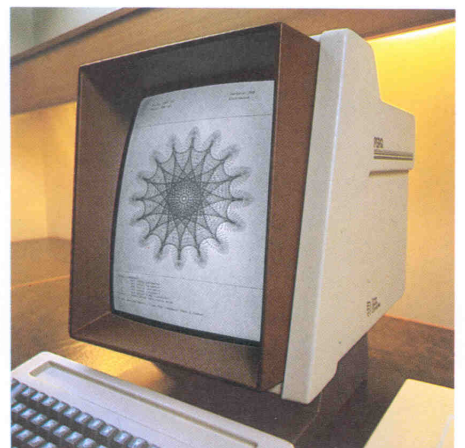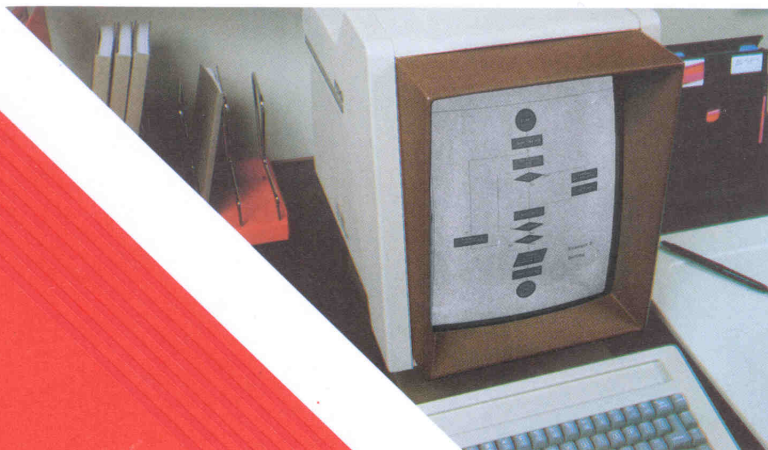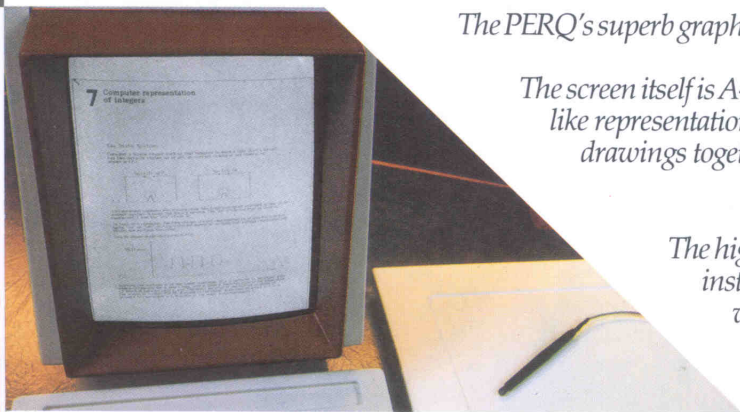
A natural facility

Even for the experienced user, interacting with a computer via a keyboard can be a time-consuming and unnatural function. The PERQ keyboard is therefore enhanced with extra keys, such as 'OOPS' and 'HELP', which are used to improve the ease of interaction.

To interact with the display it is much more natural to point, and this is achieved by the provision of a graphics tablet and stylus. This can either be used to input diagrams, or to control a hardware cursor displayed on the screen. The systems software is designed to exploit this more natural method of interaction. The editor, for example, enables you to select areas of text, to scroll up or down, or position the display within the file, all by a simple depression of the stylus.

Similarly, menus of commands can be displayed and selected in this manner.

The special graphics features mean that the screen may be divided into separate areas, or windows, of any size, each of which may be regarded as a virtual screen.
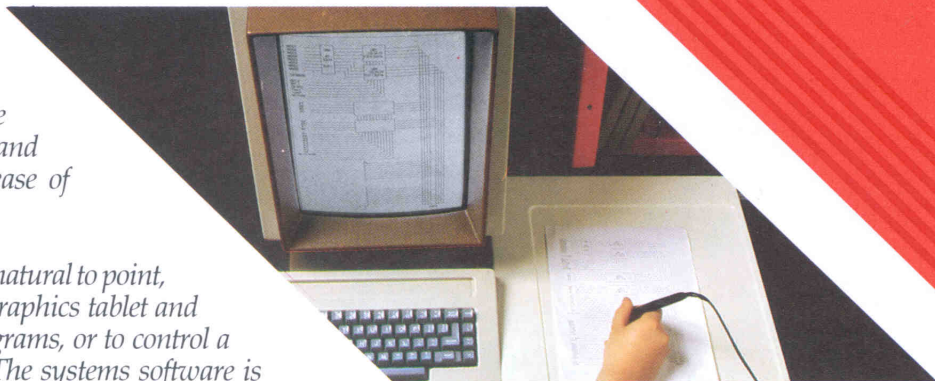
The right connections

PERQ not only offers stand-alone features. In addition, PERQ provides you with standard interfaces and the ability to communicate and share resources with other PERQ users.

A full standard implementation of the General Purpose Instrumentation Bus (GPIB) provides an easy way of interfacing a wide range of medium speed peripherals and laboratory equipment, while a standard serial port (RS-232) enables communications over slow to medium speed lines.

Moreover, the option of connecting to a Local Area Network means that you can communicate with other PERQ users, and share data or specialised resources with them, at a speed comparable with disc data transfer rates.

To handle these interfaces without impairing efficiency, PERQ employs a separate and dedicated processor for input/output.
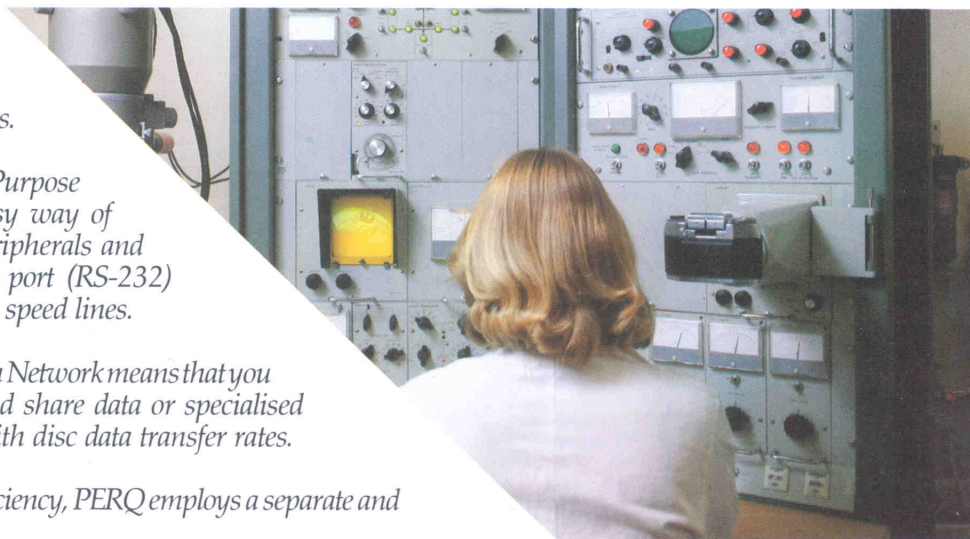
PERQ Specification

General Information

Power requirements
Source: 220/240V AC
Line frequency: 50 Hz
Power consumption: 720 watts

Environmental requirements
Normal office environment

Physical dimensions
Base unit — height: 670mm   width: 360mm   depth: 670mm   weight: approx. 50Kg
Display   — height: 480mm   width: 330mm   depth: 480mm   weight: approx. 15Kg

Hardware Specification
The basic PERQ system consists of:

Processor
Microprogrammed bit-sliced 16-bit CPU
High-level language directed architecture
Integrated input/output controllers
Speed: up to 1 million Q-codes per second (Q-code is variant of P-code)
4K Writable Control Store at 170ns cycle time

Memory
256 Kbytes - 1 Mbyte of 680ns RAM with parity checking

Display
Free-standing
Screen diagonal: 350mm
Raster size — height: 275mm   width: 210mm
Manually adjustable screen brightness
60Hz refresh rate
P-104 white tube phosphor
Manually adjustable elevation: $\pm 5°$
Screen capacity: 1024×768 pixels
Dot spacing: 0.27mm
Maximum distance from base unit: 2.5m
Character cursor selectable as any character under software control
Hardware cursor user definable, up to 64×64 pixels

Keyboard
Free-standing
ASCII character code
N-key rollover
Auto-repeat
Electronic shiftlock
Selectric layout + extra function keys
Maximum distance from base unit: 2.5m

Graphics tablet

Free-standing
Overall dimensions: $395 \times 395 \times 45mm$
Active area: $280 \times 280mm$
Magnetostrictive operation
Power requirements: 220/240V AC
Resolution: 0.127mm

Fixed disc unit

14" Winchester rigid disc
24 Mbytes formatted capacity
2 discs, 8 heads (2 per surface)
Rotational speed: 2964rpm
Transfer rate: 887.5 Kbytes/sec
Average latency: 10.1ms
Track-to-track seek: 20ms

Floppy disc drive

8" double-sided, double density
77 tracks/side, 26 sectors/track
1 Mbyte formatted capacity
Rotational speed: 360rpm
Transfer rate: 62.5 Kbytes/sec
Head load time: 35ms
Settling time: 8ms
Latency: 83.3ms
Track-to-track seek: 8ms

GPIB interface

Full IEEE 488-1975 standard implementation of the
General Purpose Instrumentation Bus

RS-232-C interface

Full duplex, serial data port
Supports asynchronous and synchronous communications
Speeds: up to 56 Kbits/sec
Programmable speed and data format

Software Specification

Operating system

Supports multiple process, virtual memory system
Display window manager
Symbolic debugger
Editor
Linker
Dis-assembler
File manager
Network support

Pascal compiler

The PERQ Pascal is an upward compatible extension of the
programming language defined in the 'Pascal User Manual
and Report' by Jensen and Wirth.

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